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Title: Differential response of rice varieties to RS toxin, a pathogenicity
             factor in Sheath Blight disease of rice.

Sheath blight (SB) disease, caused by *Rhizoctonia solani* Kühn, is regarded as the second most important disease of cultivated rice. There are no known high levels of resistance in cultivars grown in the US however, tolerance to this disease has been identified in foreign germplasm that is not well adapted for production in the US. It is believed that this tolerance is controlled by quantitative trait loci (QTL) (several genes) making it more difficult to select for in the development of new rice varieties. In addition, disease incidence and severity is influenced by plant architecture, environment and cultural management practices, making selection for tolerance in breeding populations very difficult.

The objective of this project is to develop a robust, high-throughput screening assay for determining resistance to Sheath Blight disease using an RS toxin that is produced by the pathogen. We will develop a standardized method for toxin isolation, purification, and delivery to rice plants in a consistent and reproducible manner, and determine the relationship between toxin sensitivity and disease susceptibility in host plants. Development of such an improved method will allow efficient evaluation of breeding and genetic materials for tolerance to this important disease and may ultimately lead to identification of genes associated with resistance.